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Appl. No. 10/659,554
Amdt. dated November 26, 2007
Reply to Office Action of September 25, 2007

This listing of claims replaces all prior versions, and listings of claims in the instant application:

Listing of Claims:

1. (Cancelled)

2.-29. (Cancelled)

30. (Previously Presented) A small footprint device comprising:

at least one processing element configured to execute groups of one or more program modules in separate contexts,

wherein said one or more program modules comprising zero or more sets of executable instructions and zero or more sets of data definitions,

said zero or more sets of executable instructions and said zero or more data definitions grouped as object definitions, and

each context comprising a protected object instance space such that at least one of said object definitions is instantiated in association with a particular context;

a memory comprising instances of objects,

a context barrier for separating and isolating said contexts, said context barrier configured for controlling execution of at least one instruction of one of said zero or more sets of instructions comprised by a program module based at least in part on whether said at least one instruction is executed for an object instance associated

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with a first one of said separate contexts and whether said at least one instruction is requesting access to an instance of an object definition associated with a second one of said separate contexts, said context barrier further configured to prevent said access if said access is unauthorized and enable said access if said access is authorized; and

an entry point object for permitting one program module to access information from another program module across said context barrier.

31. (Previously Presented) The small footprint device of claim 30 in which said context barrier allocates separate name spaces for each program module.

32. (Previously Presented) The small footprint device of claim 30 in which at least two program modules can access said entry point object even though they are located in different respective name spaces.

33. (Previously Presented) The small footprint device of claim 30 in which said context barrier allocates separate memory spaces for each program module.

34. (Previously Presented) The small footprint device of claim 33 in which at least two program modules can access said entry point object even though they are located in different respective memory spaces.

35. (Previously Presented) The small footprint device of claim 30 in which said context barrier enforces security checks on at least one of a principal, an object, and an action.

GUNNISON, McKay &
HODGSON, L.L.C.
Golden West Office Plaza
1900 Quince Road, Suite 220
Menlo Park, CA 94025
(311) 655-0880
Fax (311) 655-0888

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36. (Previously Presented) The small footprint device of claim 35 in which at least one security check is based on partial name agreement between a principal, and an object.

37. (Previously Presented) The small footprint device of claim 36 in which at least one program can access said entry point object without said at least one security check.

38. (Previously Presented) The small footprint device of claim 35 in which at least one security check is based on memory space agreement between a principal and an object.

39. (Previously Presented) The small footprint device of claim 38 in which at least one program can access said entry point object without said at least one security check.

40. (Previously Presented) The small footprint device of claim 30 wherein an object instance is associated with a context by recording the name of said context in a header of said object instance, information in said header inaccessible to said one or more program modules.

41. (Previously Presented) The small footprint device of claim 30 wherein

said memory comprises object header data, said object header data comprising information associated with at least one of said instances of objects; and

said controlling execution is based at least in part on said object header data.

42. (Previously Presented) The small footprint device of claim 30 wherein

GUNNISON, MCKAY &
HODGSON, L.L.P.
Garden West Office Plaza
1901 Garden Road, Suite 220
Menlo Park, CA 94025
(831) 655-0888
Fax (831) 655-0888

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said memory is partitioned into a plurality of memory spaces with instances of objects allocated for storage in one of said plurality of storage spaces; and

said controlling execution is based at least in part on determining the storage space allocated to an executing object instance and an accessed object instance.

43. (Currently Amended) A method of operating a small footprint device that includes a processing machine, wherein program modules are executed on the processing machine, the method comprising:

separating contexts using a context barrier, said context barrier configured [[to]] for controlling execution of at least one instruction of one of zero or more sets of instructions comprised by a program module based at least in part on whether said at least one instruction is executed for an object instance associated with a first one of said separate contexts and whether said at least one instruction is requesting access to an instance of an object definition associated with a second one of said separate contexts, said separating further comprising:

preventing said access if said access is unauthorized; and

enabling said access if said access is authorized;

executing groups of one or more program modules in separate contexts, said one or more program modules comprising zero or more sets of executable instructions and zero or more sets of data definitions, said zero or more sets of executable instructions and said zero or more data definitions grouped as object definitions, each context comprising a protected object instance space such

GUNNISON, MCKAY &
HODGSON, L.L.P.
Gordon West Office Plaza
1900 Gordon Road, Suite 220
Menlo Park, CA 94025
(650) 655-0880
Fax (650) 655-0888

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that at least one of said object definitions is instantiated in association with a particular context; and permitting access to information across said context barrier using an entry point object.

44. (Previously Presented) The method of claim 43 wherein an object instance is associated with a context by recording the name of said context in a header of said object instance, information in said header inaccessible to said one or more program modules.

45. (Previously Presented) The method of claim 43 wherein said controlling execution is based at least in part on object header data comprising information associated with at least one of said instances of objects.

46. (Previously Presented) The method of claim 43 wherein

a memory of said small footprint device is partitioned into a plurality of memory spaces with instances of objects allocated for storage in one of said plurality of storage spaces; and

said controlling execution is based at least in part on determining the storage space allocated to an executing object instance and an accessed object instance.

47. (Previously Presented) A method of permitting access to information on a small footprint device from a first program module to a second program module separated by a context barrier, said small footprint device comprising:

at least one processing element configured to execute groups of one or more program modules in separate contexts, said one or more program modules comprising zero

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or more sets of executable instructions and zero or more sets of data definitions, said zero or more sets of executable instructions and said zero or more data definitions grouped as object definitions, each context comprising a protected object instance space such that at least one of said object definitions is instantiated in association with a particular context;

a memory comprising instances of objects; and

a context barrier for separating and isolating said contexts, said context barrier configured for controlling execution of at least one instruction of one of said zero or more sets of instructions comprised by a program module based at least in part on whether said at least one instruction is executed for an object instance associated with a first one of said separate contexts and whether said at least one instruction is requesting access to an instance of an object definition associated with a second one of said separate contexts, said context barrier further configured to prevent said access if said access is unauthorized and enable said access if said access is authorized, the method comprising:

creating an entry point object which may be accessed by at least two program modules; and

using said entry point object to permit access to information across said context barrier.

48. (Previously Presented) The method of claim 47 wherein an object instance is associated with a context by recording the name of said context in a header of said object instance, information in said header inaccessible to said one or more program modules.

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49. (Previously Presented) The method of claim 47 wherein said controlling execution is based at least in part on object header data comprising information associated with at least one of said instances of objects.

50. (Previously Presented) The method of claim 47 wherein

a memory of said small footprint device is partitioned into a plurality of memory spaces with instances of objects allocated for storage in one of said plurality of storage spaces; and

said controlling execution is based at least in part on determining the storage space allocated to an executing object instance and an accessed object instance.

51. (Currently Amended) A computer program product, comprising:

a ~~tangible~~ memory storage medium; and

a computer controlling element comprising instructions for implementing a context barrier on a small footprint device and for bypassing said context barrier using an entry point object, said small footprint device comprising:

at least one processing element configured to execute groups of one or more program modules in separate contexts, said one or more program modules comprising zero or more sets of executable instructions and zero or more sets of data definitions, said zero or more sets of executable instructions and said zero or more data definitions grouped as object definitions, each context comprising a protected object instance space such that at least one of said object definitions is instantiated in association with a particular context;

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a memory comprising instances of objects; and
a context barrier for separating and isolating said contexts, said context barrier configured for controlling execution of at least one instruction of one of said zero or more sets of instructions comprised by a program module based at least in part on whether said at least one instruction is executed for an object instance associated with a first one of said separate contexts and whether said at least one instruction is requesting access to an instance of an object definition associated with a second one of said separate contexts, said context barrier further configured to prevent said access if said access is unauthorized and enable said access if said access is authorized.

52. (Cancelled)

53. (Currently Amended) A computer program product, comprising:

a ~~tangible~~ memory storage medium; and
a computer controlling element comprising instructions for separating a plurality of programs on a small footprint device by running them in respective contexts and for permitting one program to access information from another program by bypassing a context barrier using an entry point object, said small footprint device comprising:

at least one processing element configured to execute groups of one or more program modules in separate contexts, said one or more program modules comprising zero or more sets of executable instructions and zero or more sets of data definitions, said zero or more sets of

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executable instructions and said zero or more data definitions grouped as object definitions, each context comprising a protected object instance space such that at least one of said object definitions is instantiated in association with a particular context;

a memory comprising instances of objects; and

a context barrier for separating and isolating said contexts, said context barrier configured for controlling execution of at least one instruction of one of said zero or more sets of instructions comprised by a program module based at least in part on whether said at least one instruction is executed for an object instance associated with a first one of said separate contexts and whether said at least one instruction is requesting access to an instance of an object definition associated with a second one of said separate contexts, said context barrier further configured to prevent said access if said access is unauthorized and enable said access if said access is authorized.

54. (Cancelled)

55. (Cancelled)

56. (Cancelled)

57. (Previously Presented) A method of transmitting code over a network, comprising transmitting a block of code from a server, said block of code comprising instructions for implementing an entry point object for bypassing a context barrier on a small footprint device over a communications link, said small footprint device comprising:

GUNNISON, McKay &
HODGSON, L.L.P.
Garden West Office Plaza
1900 Chardon Road, Suite 220
Monterey, CA 93940
(415) 655-0880
Fax (415) 655-0883

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at least one processing element configured to execute groups of one or more program modules in separate contexts, said one or more program modules comprising zero or more sets of executable instructions and zero or more sets of data definitions, said zero or more sets of executable instructions and said zero or more data definitions grouped as object definitions, each context comprising a protected object instance space such that at least one of said object definitions is instantiated in association with a particular context;

a memory comprising instances of objects; and

a context barrier for separating and isolating said contexts, said context barrier configured for controlling execution of at least one instruction of one of said zero or more sets of instructions comprised by a program module based at least in part on whether said at least one instruction is executed for an object instance associated with a first one of said separate contexts and whether said at least one instruction is requesting access to an instance of an object definition associated with a second one of said separate contexts, said context barrier further configured to prevent said access if said access is unauthorized and enable said access if said access is authorized.